

# JAPAN

## EDICT OF GOVERNMENT

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JIS B 9713-2 (2004) (English): Safety of  
machinery -- Permanent means of access to  
machinery -- Part 2: Working platforms and  
walkways

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*The citizens of a nation must  
honor the laws of the land.*

Fukuzawa Yukichi

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JAPANESE  
INDUSTRIAL  
STANDARD

Translated and Published by  
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JIS B 9713-2 : 2004

(ISO 14122-2 : 2001)

(JMF)

**Safety of machinery — Permanent  
means of access to machinery —  
Part 2: Working platforms and  
walkways**

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ICS 13.110

Reference number : JIS B 9713-2 : 2004 (E)

## Foreword

This translation has been made based on the original Japanese Industrial Standard established by the Minister of Health, Labour and Welfare and the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee according to the proposal of establishing a Japanese Industrial Standard from the Japan Machinery Federation (JMF) / the Japanese Standards Association (JSA), with a draft of Industrial Standard based on the provision of Article 12 Clause 1 of the Industrial Standardization Law.

This Standard has been made based on **ISO 14122-2 Safety of machinery — Permanent means of access to machinery — Part 2: Working platforms and walkways** for the purposes of making it easier to compare this Standard with International Standard; to prepare Japanese Industrial Standard conforming with International Standard; and to propose a draft of an International Standard which is based on Japanese Industrial Standard.

Attention is drawn to the possibility that some parts of this Standard may conflict with a patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have technical properties. The relevant Ministers and the Japanese Industrial Standards Committee are not responsible for identifying the patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have the said technical properties.

**JIS B 9713** consists of the following parts, under the general title "*Safety of machinery — Permanent means of access to machinery*" :

- Part 1 : Choice of fixed means of access between two levels*
- Part 2 : Working platforms and walkways*
- Part 3 : Stairs, stepladders and guard-rails*
- Part 4 : Fixed ladders.*

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the original JIS is to be the final authority.

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## Contents

	Page
Introduction .....	1
1 Scope .....	2
2 Normative references .....	2
3 Terms and definitions .....	3
3.1 flooring .....	3
3.2 walkway .....	3
3.3 working platform .....	3
3.4 slip resistant surface .....	3
4 Colour of colour chips .....	3
4.1 General .....	3
4.2 Specific requirements .....	4
5 Assembly instructions .....	7
Annex A (informative) Different methods of determining levels of slip-resistance .....	8
Annex B (informative) Bibliography .....	10

## Safety of machinery — Permanent means of access to machinery — Part 2 : Working platforms and walkways

**Introduction** This Japanese Industrial Standard has been prepared based on the first edition of **ISO 14122-2** *Safety of machinery — Permanent means of access to machinery — Part 2 : Working platforms and walkways* published in 2001 without modifying the technical contents.

The foreword of the original International Standard has been excluded because it is not part of the provisions. The part given sidelines is a matter not stated in the original International Standard.

This part of **JIS B 9713** is a group safety standard and Part 2 of the series of standards in **JIS B 9713**.

The provisions of this document may be supplemented or modified by a product safety standard.

- NOTES
- 1 For machines which are covered by the scope of a product safety standard and which have been designed and built according to the provisions of that standard, the provisions of that product safety standard take precedence over the provisions of this group safety standard.
  - 2 This Standard requires the manufacturers to provide “safe access to operating position, servicing points and maintenance area” and to prevent “risk of slipping, tripping or falling”.
  - 3 See also relevant matters described in **6.2.4** “*Provision for safe access to machinery*” of **ISO 12100-2**.
  - 4 The use of materials other than metals (wood composite materials, so-called “advanced” materials, etc.) does not alter the application of this part of **JIS B 9713**.

Information : **JIS Z 8051** : 2004 sets up the “hierarchy” of safety standards as follows :

- *basic safety standard*, comprising fundamental concepts, principles and requirements with regard to general safety aspects applicable to a wide range of products, processes and services;
- *group safety standard*, comprising safety aspects applicable to several or a family of similar products, processes or services dealt with by more than one committee, making reference, as far as possible, to basic safety standards;
- *product safety standard*, comprising safety aspect(s) for a specific, or a family of, product(s), process(es) or service(s) within the scope of a single committee, making reference, as far as possible, to basic safety standards and group safety standards;

The purpose of this Standard is to define the general requirements for safe access to machines mentioned in **ISO 12100-2**. Part 1 of **JIS B 9713** gives advice about the

correct choice of access means when the necessary access to the machine is not possible directly from the ground level or from a floor.

Information : The dimensions specified are consistent with established ergonomic data given in **EN 547-3** "*Safety of machinery — Human body dimensions — Part 3 : Anthropometric data*".

**1 Scope** This Standard applies to all machinery (stationary and mobile) where fixed means of access are necessary.

This Standard applies to working platforms and walkways which are a part of a machine.

This Standard may also apply to working platforms and walkways to that part of the building where the machine is installed, providing the main function of that part of the building is to provide a means of access to the machine.

NOTES 1 This Standard may be used also for means of access which are outside the scope of this Standard. In those cases the possible relevant national or other regulations should take precedence.

This Standard applies also to working platforms and walkways specific to the machine which are not permanently fixed to the machine and which may be removed or moved to the side for some operations of the machine (e.g. changing tools in a large press).

This Standard does not apply to lifts, to moveable elevating platforms or other devices specially designed to lift persons between two levels.

For the significant hazards covered by this Standard, see clause 4 of **JIS B 9713-1**.

2 The International Standard corresponding to this Standard is as follows.

In addition, symbols which denote the degree of correspondence in the contents between the relevant International Standard and **JIS** are IDT (identical), MOD (modified), and NEQ (not equivalent) according to **ISO/IEC Guide 21**.

ISO 14122-2 : 2001 *Safety of machinery — Permanent means of access to machinery — Part 2 : Working platforms and walkways* (IDT)

**2 Normative references** The following standards contain provision which, through reference in this Standard, constitute provisions of this Standard. The most recent editions of the standards (including amendments) indicated below shall be applied.

JIS B 9707 *Safety of machinery — Safety distances to prevent danger zones being reached by the upper limbs*

NOTE : **ISO 13852** : 1996 *Safety of machinery — Safety distances to prevent danger zones being reached by the upper limbs* is identical with the said standard.

JIS B 9713-1 *Safety of machinery — Permanent means of access to machinery — Par 1: Choice of a fixed means of between two levels*

NOTE : **ISO 14122-1** : 2001 *Safety of machinery — Permanent means of access to machinery — Par 1: Choice of a fixed means of between two levels* is identical with the said standard.



*JIS B 9713-3 Safety of machinery — Permanent means of access to machinery  
— Part 3: Stairs, stepladders and guard-rails*

NOTE : **ISO 14122-3** : 2001 *Safety of machinery — Permanent means of access to machinery — Part 3: Stairs, stepladders and guard-rails* is identical with the said standard.

**3 Terms and definitions** For the purposes of this part of **JIS B 9713**, the terms and definitions stated in clause 3 of **JIS B 9713-1** and the following additional definitions apply :

Information : **EN 1070** contains terms and definitions related to this part of **JIS B 9713**.

**3.1 flooring** assembly of elements making up the floor of a walkway or a working platform and being in direct contact with footwear.

**3.2 walkway** level surface used for moving from one point to another

**3.3 working platform** level surface used for the operation, maintenance, inspection, repair, sampling and other phases of work in connection with the machinery

**3.4 slip resistant surface** flooring surface designed for improving the grip of footwear

**4 General requirements** Walkways and working platforms shall comply with the following general safety requirements :

**4.1 General** The working platforms and walkways shall be designed, constructed, located and where necessary protected so that the operators are safe when having access to the working platforms and when they are on them for the operation, setting, monitoring, repairing or any other work involved with the machinery.

**4.1.1 Construction and materials** Working platforms and walkways shall be designed and constructed and the materials selected so that they withstand the foreseeable conditions of use. In particular, at least the following details shall be considered:

- a) dimensioning and selection of components (including fixings, connections, supports and foundations) to ensure sufficient rigidity and stability;
- b) resistance of all parts to environmental effects (such as climate, chemical agents, corrosive gases) e.g. by the use of a corrosion resistant material or with the aid of a suitable protective coating;
- c) positioning of constructional elements so that water cannot be accumulated e.g. in the joints;
- d) use of compatible materials e.g. to minimise galvanic action or differential thermal expansion;
- e) dimension of walkways and working platforms shall be according to available anthropometric data (see **4.2.2**);

Information : See also **EN 547-1** and **EN 547-3**.

- f) walkways and working platforms shall be designed and constructed to prevent the hazards due to falling objects. For guard-rails and toe plates, see clause 7 of **JIS B 9713-3** and for openings in the flooring, see 4.2.4.4 of this Standard;
- g) the removal of any part of the machine shall, as far as practicable, be possible without removing guard-rails, pieces of flooring or other permanent protective barriers.

**4.1.2 Safety of operators** Walkways and working platforms shall be designed and constructed so that they are safe to use. In particular, the following details shall at least be considered:

- a) all parts likely to be in contact with operators shall be designed and built in such a way that the operator is safe-guarded against injuries;
- b) walkways and working platforms shall be designed and built in such a way that the walking surfaces have durable slip resistant properties;
- c) the parts of machinery which operators have to walk or stand on shall be designed and fitted out to prevent persons falling from them (see **JIS B 9713-3**);
- d) working platforms and access to working platforms shall be laid out in such a way that operators can quickly leave their workplace in the event of a hazard or can be quickly helped and easily evacuated when necessary;
- e) handrails and other supports shall be designed, built and laid out in such a way that they are used instinctively.

## **4.2 Specific requirements**

**4.2.1 Location** As far as possible, walkways and working platforms shall be located away from the emission of harmful materials or substances or from the accumulation of material which is likely to cause slipping.

Where there are moving objects, non protected hot surfaces, unprotected live electrical equipment, etc., safety distances shall be applied in accordance with **JIS B 9707**.

Working platforms shall be located in such a way as to allow people to work in an ergonomic position, if possible, between 500 mm and 1 700 mm, above the surface of the working platform.

**4.2.2 Dimensions** The clear length and width of walkways and working platforms intended for operation and maintenance shall be determined by:

- a) the demands of the task e.g. positions, nature and speed of movement, application of force, etc.;
- b) whether or not tools, spare parts etc. are being carried;
- c) frequency and duration of task and use;
- d) number of operators on walkways or working platforms at the same time;
- e) possibility of operators meeting;
- f) whether or not additional equipment such as safety clothing is being worn or personal protective equipment is being carried;
- g) the presence of isolated obstacles ;

- h) the evacuation of an injured person ;
- i) walkway ending in a dead end ;
- j) walls likely to damage or mark operators' clothing ;
- k) the need for unrestricted work-movements, and the need for space when using foreseeable tools.

Unless exceptional circumstances exist the minimum headroom over working platforms and walkways shall be 2 100 mm.

Information : See also **EN 547-1** and **EN 547-3** for relevant provisions.

**NOTES** 1 When justified by the risk assessment and restrictions due to the machinery or environment, the clear height may be reduced to no less than 1 900 mm if :

- the working platform or walkway is used only occasionally, or
- the reduction is made only for a short distance.

Unless there are exceptional circumstances, the clear width of a walkway shall be minimum 600 mm but preferably 800 mm. When the walkway is usually subject to passage or crossing of several persons simultaneously, the width shall be increased to 1 000 mm. The width of the walkway, when designed as an escape way shall meet the requirements of appropriate regulations.

2 When justified by the risk assessment and restrictions due to the machinery or environment, the free width may be reduced to no less than 500 mm if :

- the working platform or walkway is used only occasionally, and
- the reduction is made only for a short distance.

If there are isolated obstacles on a wall or under a ceiling that restrict the required width or height, guarding shall be provided. Moreover, safety measures, e.g. padding, shall be fitted to prevent injuries. Warning signs should also be considered.

**4.2.3 Facilities or equipment** Guard-rails in accordance with **JIS B 9713-3** shall be provided if there is a risk of falling from walkways or working platforms from a height of 500 mm or more. Guard-rails are also required at places where there is a risk of sinking or collapsing (e.g. walkway to access to an extraction machine on a roof).

Appropriate facilities shall be provided for handling heavy objects without rolling or placing them on working platforms.

#### **4.2.4 Floorings**

**4.2.4.1 Hazards due to stagnation and/or accumulation of liquid** Floorings shall be designed such that any liquids spilled on them are drained away. If this requirement is not possible to fulfil for some special reasons, slipping and other hazards caused by the liquid shall be prevented or minimized in some other suitable way.

**4.2.4.2 Hazards due to accumulated substances** Floorings shall be made in such a way that neither dirt, snow, ice, etc. nor other substances may accumulate.

Therefore, permeable floorings such as gratings or cold formed planks are an advantage. If this is not possible and permeable floorings are not used, facilities for removing the accumulated substances shall be provided where necessary.

**4.2.4.3 Trip hazards** To avoid trip hazards, the greatest difference between the tops of neighbouring flooring surfaces shall not exceed 4 mm in height.

**4.2.4.4 Hazards generated by falling objects**

a) **Flooring** Generally, the risk assessment effects the choice of open floorings to working platforms or walkways:

- the flooring of a working platform or walkway shall only have such maximum openings that a ball with a diameter of 35 mm cannot fall through;
- floorings above a place where people are working, as opposed to occasional passage, shall have such maximum openings that a ball with a diameter of 20 mm cannot fall through unless the same safety is guaranteed by other suitable means.

In cases where the risk assessment concludes that hazards caused by objects or other materials falling or passing through the flooring are more significant than the slipping, falling, etc. hazards, the flooring shall have no opening.

b) **Joints** Between the edges of floorings and adjacent construction elements or opening edges required to suit elements fitted in the openings e.g. piping, bins or supports, a toe plate is necessary if the distance between flooring and element exceeds 30 mm.

**4.2.4.5 Falling through flooring hazard** If flooring is made of detachable elements, i.e. removable, e.g. where required for maintenance of auxiliary equipment mounted below flooring:

- any hazardous movement of these elements shall be prevented e.g. by fasteners;
- it shall be possible to inspect fixings in order to detect any corrosion or any hazardous loosening or change of position of clamps.

**4.2.4.6 Slip hazards** Floorings shall have a surface finish which is designed to reduce the risk of slipping. See informative annex A for the slip-resistance.

**4.2.5 Design loads** The schedule of specifications for the working platforms and walkways shall state the load for which it is designed.

The minimum operating loads to take into account for the landing, walkways and working platforms are:

- 2 kN/m<sup>2</sup> under distributed load for the structure;
- 1.5 kN concentrated load applied in the most unfavourable position over a concentrated load area of 200 mm × 200 mm for the flooring.

When loaded with the designed load, the deflection of the flooring shall not exceed 1/200<sup>th</sup> of the span and the difference between the loaded and a neighbouring unloaded flooring shall not exceed 4 mm in height.

The safe strength design of the walkways and working platforms shall be verified either by calculation or by tests.

**5 Assembly instructions** All information on the proper assembly shall be contained in the assembly instructions. In particular, information on the method of fixing shall be included.

## **Annex A (informative) Different methods of determining levels of slip-resistance**

This annex is to supplement the matters related to the text and not to constitute the provisions of this part of **JIS B 9713**.

No Standards exist for the moment, but in the meantime, any of the following national documents are available for consultation:

### **France**

#### **Necessary requirement for standard of floor slippage measurement — Research document and discussion**

Exigences pour une norme de mesure de la glissance des sols — Étude documentaire et discussion — ND 1987-159-95-INRS

#### **Anti-slipping floor — Criteria for evaluating anti-slippage — Application to industrial of comestible**

Sols anti-dérapants — Critère d'évaluation de la résistance au glissement — Application aux sols des industries de l'alimentation — ND 1853-145-91

#### **Standardisation of slippage between floor and chaussures**

Normalisation de la glissance des sols et des chaussures — ND 1936-152-93

#### **Floor slippage and coefficient of surface**

Glissance des sols et coefficients de frottement — Cahier 2484 (avril 1991)-CSTB

### **Germany**

#### **Manual for floor coating of working region and slipping hazard of labour area**

Merkblatt für Fußböden in Arbeitsräumen und Arbeitsbereichen mit Rutschgefahr — ZH 1/571 — (Oktober 1993) — HVBG.

### **United Kingdom**

#### **Performance requirements and test methods for impact absorbing playground surfacing**

BS 7188:1989 — Impact absorbing playground surfacing — Performance requirements and test methods — Clause 5 “Slip resistance”

BS 8204-2 : 1993 — In-situ floorings Part 3. Code of practice for polymer modified cementitious wearing surfaces Annex C “Determination of slip resistance value SRV”

### **Japan**

**Technical guideline for safety shoes** : Guideline of National Institute of Industrial Safety, RIIS-TR-90, March 1991

**Study of safety of stairway and passageway, “4.4 anti-slip material”** : Study report of National Institute of Industrial Safety RIIS-TR-92-29-2

**Researches on safety shoes slip test method (First report Basic of measurement) :** Study report of National Institute of Industrial Safety RIIS-RR-89

**Researches on safety shoes slip test method (Second report Development of slipping test device) :** Study report of National Institute of Industrial Safety RIIS-RR-90

## **Annex B (informative) Bibliography**

This annex is to supplement the matters related to the text and not to constitute the provisions of this part of **JIS B 9713**.

No Standards exist for the moment, but in the meantime, any of the following national documents are available for consultation:

- JIS B 9702 *Safety of machinery — Principles of risk assessment*
- JIS B 9708 *Safety of machinery — Safety distances to prevent danger zones being reached by the lower limbs*
- JIS B 9711 *Safety of machinery — Minimum gaps to avoid crushing of parts of the human body*
- JIS B 9713-4 *Safety of machinery — Permanent means of access to machinery — Part 4 : Fixed ladders*
- ISO 12100-1 *Safety of machinery — Basic concepts, general principles for design — Part 1 : Basic terminology, methodology*
- ISO 12100-2 *Safety of machinery — Basic concepts, general principles for design — Part 2 : Technical principles*
- EN 131-2 : 1993 *Ladders — Requirements, Tests, Markings*
- EN 353-1 *Personal protective equipment against falls from a height — Guided type fall arresters on a rigid anchorage line*
- EN 364 *Personal protective equipment against falls from a height — Test methods*
- EN 547-1 *Safety of machinery — Human body dimensions — Part 1 : Principle for determining the dimensions required for openings for whole body across into machinery*
- EN 547-2 *Safety of machinery — Human body dimensions — Part 2 : Principle for determining the dimensions required for across openings*
- EN 547-3 *Safety of machinery — Human body dimensions — Part 3 : Anthropometric data*
- EN 795 *Protection against falls from a height — Anchorage devices — Requirements and testing*
- EN 1070 *Safety of machinery — Terminology*



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